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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

REIFSNYDER, DAVID A

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 06/24/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/049,956

Applicant(s)

SMYTH ET AL.

Examiner

David A Reifsnyder

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the applicant on a separate page (i.e. a PTO-1449), or by the examiner on form PTO-892, they have not been considered.

Abstract of the Disclosure

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "24" and "50" have both been used to designate an overflow outlet/exit. (i.e. outlet and exit it taken to mean the same thing)

Furthermore, the drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the instantly claimed end wall having thee or more radial portions are claims 6 and 7 must be canceled. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: The specification is confusing as it gives differing names to the same reference number. In the specification **except for the claims**, reference number 16 is either "inner ramp 16", "low ramp 16" or "inner low ramp 16"; reference number 22 is either "underflow exit 22" or "underflow connection 22"; reference number 24 is either "overflow exit 24" or "overflow connection 24". Furthermore, regarding reference numbers 22 and 24 respectively, the claims claim an "underflow connection" and an "overflow connection". Therefore, if the applicant decides to have reference numbers 22 and 24 describe an "underflow exit 22" and an "overflow exit 24" because "exit" clearly is a more accurate description of reference numbers 22 and 24 than "connection"; the applicant would need to claim overflow and underflow exits instead of overflow and underflow connections. Furthermore, the specification is confusing because it describes reference number 24 as an overflow exit/connection, and reference number 50 as an overflow outlet. From looking at the figures it is believed that overflow exit/connection 24 is describing the same thing as the overflow outlet 50.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2 and 5-11 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The back wall comprising multiple side-by-side spiraling slopes, the steepest slope being farthest from the longitudinal axis with adjacent slopes becoming shallower as measured radially inwardly toward the longitudinal axis discussed on page 3, lines 4-12 of the specification is critical or essential to the practice of the invention, but is not included in claims 1, 2 and 51-11. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Furthermore, the detailed descriptions as well as the figures all show a back wall having an inner ramp 16 and an outer ramp 14; therefore, a back wall having an inner ramp and an outer ramp is a critical and essential part of the invention.

Claims 6-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claim 6-11, the specification fails to teach the instantly claimed end wall. The specification does teach a back wall; however, even if the end wall is the same wall as the back wall, claims 6 and 7 will still be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Claims 6 and 7

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claim that the end/back? wall comprises three or more radial portions/ramps?. The specification doesn't adequately teach a back wall comprising three or more radially portions. The only portion of the specification that teaches that the back wall can have three or more portions is the Background of the Invention. The rest of the Specification including all of the Figures teaches that the back wall has an inner ramp/portion and an outer ramp/portion.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1; the recitation of "the overflow back wall" lacks antecedent basis and is vague and indefinite as to how an overflow back wall is different from the first claimed back wall. The best way to correct this would be to claim that the back way is an overflow back wall as that better describes the back wall. Furthermore, the recitation of "the opposite end of the body" lacks antecedent basis and is vague and indefinite as to what the end is opposite from. (i.e. the only end of the body that the applicant has claimed is the opposite end) In addition, the recitation of "the stream of fluid" lacks antecedent basis. Also, the recitation of "back wall presenting an inclined face" is vague and indefinite as to what point of reference the back wall's face inclines from. (i.e. what part of the hydrocyclone does the back wall's inclined face incline from?) Furthermore, the recitation of "fluid entering the hydrocyclone to flow axially along the

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hydrocyclone" is vague and indefinite as to what part of the hydrocyclone the fluid enters, and what part of the hydrocyclone the fluid flows axially along. Also, the three recitations of "body" is vague and indefinite as to whether the "body" is the "housing 18" which is discussed in the specification, and if so then the term "body" should be replaced with ---housing--- in claim 1 or the term "housing 18" should be changed to ---body 18--- throughout the specification.

Regarding claim 2; the recitation of said "body" is vague and indefinite as whether the said "body" is the "housing 18" which is discussed in the specification, and if so then the term "body" should be replaced with ---housing--- in claim 2 or the term "housing 18" should be changed to ---body 18--- throughout the specification.

Furthermore, the recitation of "radially inner portion" is vague and indefinite as to whether the "portion" is the "ramp 16" discussed in the specification, and if so the term "portion" should be changed to ---ramp--- in claim 2, since changing "ramp" to ---portion--- in the specification would not describe reference number 16 very well. In addition, the recitation of "radially outer portion" is vague and indefinite as to whether the "portion" is the "ramp 14" discussed in the specification, and if so the term "portion" should be changed to ---ramp--- in claim 2, since changing "ramp" to ---portion--- in the specification would not describe reference number 14 very well.

Regarding claim 3; the recitation of "said inner radial portion" is vague and indefinite as to whether the "portion" is the "ramp 16" discussed in the specification, and if so the term "portion" should be changed to ---ramp--- in claim 3, since changing "ramp" to ---portion--- in the specification would not describe reference number 16 very

well. In addition, the recitation of "outer radial portion" is vague and indefinite as to whether the "portion" is the "ramp 14" discussed in the specification, and if so the term "portion" should be changed to --ramp-- in claim 3, since changing "ramp" to --portion-- in the specification would not describe reference number 14 very well.

Regarding claim 4; the recitation of "outer radial portion" is vague and indefinite as to whether the "portion" is the "ramp 14" discussed in the specification, and if so the term "portion" should be changed to --ramp-- in claim 4, since changing "ramp" to --portion-- in the specification would not describe reference number 14 very well.

Regarding claim 6; the recitation of "the end wall face" lacks antecedent basis. Furthermore, it is vague and indefinite as to how the end wall face is structurally related to the other parts of the cyclone in particular the "overflow back wall". In addition, the recitation of "the end wall face comprising three or more radial portions" is vague and indefinite as to what is meant by a "radial portion".

Regarding claim 8; the recitation of "the end wall face" lacks antecedent basis. Furthermore, it is vague and indefinite as to how the end wall face is structurally related to the other parts of the cyclone in particular the "overflow back wall".

Regarding claim 9; the recitations of "the end wall face" and "the longitudinal axis of the hydrocyclone" both lack antecedent basis. Furthermore, it is vague and indefinite as to how the end wall face is structurally related to other parts of the hydrocyclone, such as the back wall. In addition, since a hydrocyclone is made up of various parts the recitation of "longitudinal axis of the hydrocyclone" does not make sense because the various parts of the hydrocyclone have different axis's.

Regarding claim 10; the recitation of "said helical surfaces are flat" lacks antecedent basis. Furthermore, claim 10 does not make any sense.

Regarding claim 11; the recitation of "said helical surfaces are curved" lacks antecedent basis. Furthermore, claim 11 does not make any sense.

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Allowable Subject Matter

While it is not believed that all of the claims will be able to be amended to overcome the above 35 USC 112 first paragraph rejection, claims 1-11 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, first and second paragraphs, as set forth in this Office action.

The main reason for the allowance of claims 1-11 over art is that the prior art of record fails to describe the hydrocyclone as having all the limitations claimed as whole and including an overflow back wall presenting an inclined face for redirecting a stream of fluid to flow axially in at least two different paths having at least two axial velocity components. However as stated above for claims 1-11 to make sense, the applicant will need to claim the structure of his inclined face which redirects the stream of fluid to flow axially in the at least two different paths and having the at least two axial velocity components.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Reifsnnyder whose telephone number is 1-703-308-0456. The examiner can normally be reached on M-F 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda M Walker can be reached on 1-703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 1-703-872-9310 for regular communications and 1-703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 1-703-308-3601.


David A Reifsnnyder
Primary Examiner
Art Unit 1723

DAR
June 22, 2003